

Sidebar B: Contraindications to Reperfusion Therapy

Absolute Contraindications to Thrombolysis

- Previous hemorrhagic stroke at any time
- Other strokes or cerebrovascular events, within one year
- Known intracranial neoplasm
- Active internal bleeding (except menses)
- Suspected aortic dissection
- Acute pericarditis

Relative Contraindications to Thrombolysis

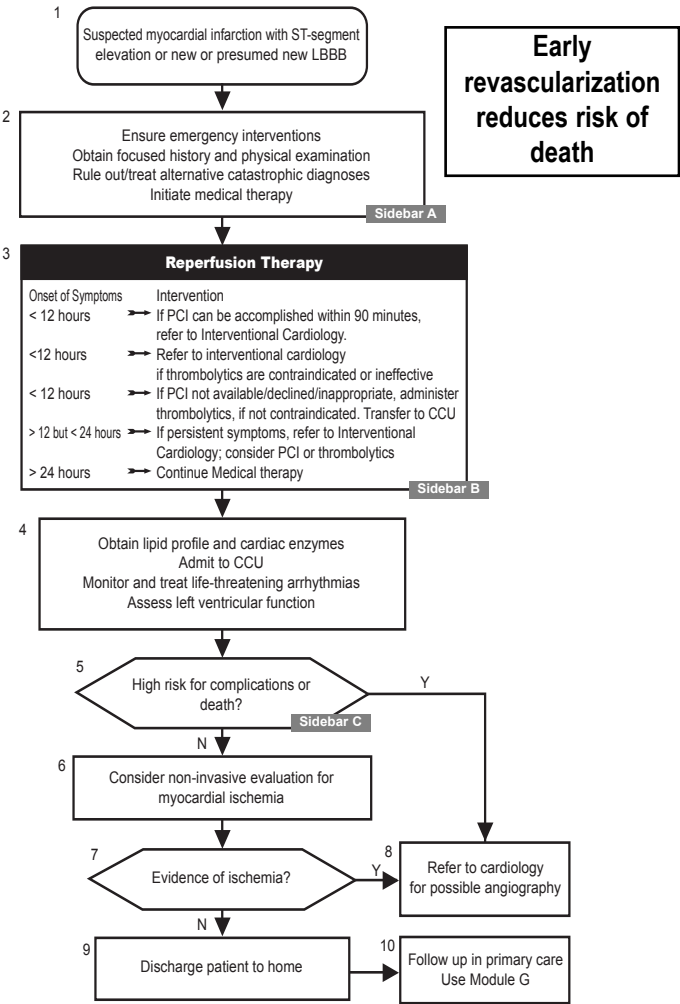
- Severe, uncontrolled hypertension on presentation (i.e., blood pressure >180/110 mm Hg)
- Current use of anticoagulants in therapeutic doses
- Known bleeding problems
- Recent trauma (i.e., within 2 to 4 weeks) including head trauma or traumatic or prolonged (i.e., >10 minutes) cardiopulmonary resuscitation (CPR)
- Recent major surgery (i.e., within 3 weeks)
- Non-compressible vascular punctures
- Recent internal bleeding (i.e., within 2 to 4 weeks)
- Prior exposure to streptokinase (i.e., 5 days to 2 years), if that agent is to be administered
- Pregnancy
- Active peptic ulcer
- History of chronic, severe hypertension
- Age >75 years
- Stroke Risk Score ≥ 4 risk factors:
  - ◊ Age ≥ 75 years
  - ◊ Female
  - ◊ African American descent
  - ◊ Prior stroke
  - ◊ Admission systolic blood pressure ≥160 mm Hg
  - ◊ Use of alteplase
  - ◊ Excessive anticoagulation (i.e., INR ≥ 4; APTT ≥ 24)
  - ◊ Below median weight (≤65 kg for women; ≤80 kg for men)
- Cardiogenic shock (i.e., sustained systolic blood pressure <90 mmHg and evidence for end-organ hypoperfusion, such as cool extremities and urine output <30 cc/hr) and CHF

Suspected Acute Myocardial Infarction or New or Presumed New LBBB

Management of Patients with ST-Segment Elevation MI or New or Presumed New LBBB

1. Admit to an intensive care unit
  2. Initiate heparin, low-molecular weight heparin, if indicated
  3. Continue beta blockers
  4. Consider ACE Inhibitor therapy in the absence of contraindications
5. *If less than 12 hours from onset of symptoms*
- Refer to PCI if intervention can be performed within 90 minutes of presentation in a high volume center by a high volume operator.
  - Initiate thrombolytic therapy, if not contraindicated and not referred for direct PCI
  - Refer to PCI, if thrombolytic therapy is contraindicated or response to thrombolysis is unsatisfactory
6. Consider non-invasive evaluation (cardiac stress test)
  7. Refer to cardiology if at high risk for death or recurrent MI and/or LV dysfunction
  8. Ensure pharmacologic therapy for ischemia, angina & CHF
  9. Discharge patient to home with appropriate follow-up

VA/DoD Clinical Practice Guideline  
Management of Ischemic Heart Disease (IHD)  
Module A Pocket Guide



Sidebar A: Emergency Interventions

- Triage patients with possible acute MI or unstable angina for evaluation and treatment
- Initiate O<sub>2</sub>, intravenous access and continuous ECG monitoring
- Institute advanced cardiac life support (ACLS), if indicated
- Obtain 12-lead electrocardiogram (ECG)
- Perform expedited history & physical to:
  - R/O alternative catastrophic diagnoses (Pericarditis, Pericardial tamponade, Thoracic aortic dissection, Pneumothorax, Pancreatitis, & Pulmonary embolus)
  - Elicit characteristics of MI
  - Contraindications to reperfusion therapy
- Administer the following:
  - Non-coated aspirin (160 to 325 mg).
  - Nitroglycerin (spray or tablet, followed by IV, if symptoms persist).
  - Beta-blockers in the absence of contraindications
  - Oral ACE-inhibitors in the absence of contraindications
  - Intravenous fractionated heparin if indicated
- Determine if patient meets criteria for emergent reperfusion therapy – if so, refer to Interventional Cardiology:
  - Hx of ischemia or infarction
  - ECG finding of LBBB or ongoing ST-segment elevation in 2 or more leads
- Ensure adequate analgesia (morphine, if needed)
- Obtain serum cardiac markers (troponin or CK-MD)
- Identify and treat other conditions that may exacerbate symptoms

Sidebar C: Thrombolytic Therapy

Current Thrombolytic Agents

- Alteplase (tPA) (100 mg maximum): 15 mg IV bolus, then 0.75 mg/kg over 30 minutes, then 0.5 mg/kg over the next 60 minutes.
- Reteplase (rPA): 10 U over 2 minutes, followed by a second 10 U IV bolus 30 minutes later.
- Streptokinase: 1.5 million units (MU) IV over 60 minutes.
- Tenectapase: IV bolus weight adjusted (30 mg to patients who weigh <60 kg, 35 mg to patients who weigh 60 kg to 69.9 kg, 40 mg to patients who weigh 70 kg to 79.9 kg, 45 mg to patients who weigh 80 kg to 89.9 kg, and 50 mg to patients who weigh ≥90 kg).

Thrombolytic agents should be started in the emergency room as mortality is directly related to time to reperfusion. Once thrombolytic agents are initiated, patients may be transferred to an intensive care unit/cardiac care unit (ICC/CCU).

Clinical Signs of Reperfusion Following Thrombolytic Administration

- Resolution of chest discomfort, within 90 minutes
- At least 50% resolution of ECG changes, within 90 minutes
- Early CK washout
- Reperfusion arrhythmias (i.e., bradyarrhythmias or accelerated idioventricular rhythm)

If a patient's symptoms and/or ECG changes do not resolve within 90 minutes, the patient should be referred to cardiology and considered for salvage angioplasty, especially if an anterior wall MI exists.

Table 4: Increased Risk for Complications or Death Following a MI

- Recurrent angina (i.e., spontaneous or inducible)
- Congestive Heart Failure (CHF)
- Polymorphic ventricular tachycardia, ventricular fibrillation, or sustained monomorphic ventricular tachycardia more than 48 hours from presentation
- Prior MI
- Ejection fraction (EF) <0.40
- Associated severe mitral or aortic valvular disease (e.g., aortic stenosis, aortic regurgitation, or mitral regurgitation)

*For Management of Initial Evaluation, Unstable Angina/NSTEMI & Follow-Up of Patient with IHD - See Respective Pocket Guide*

*Module A will be revised Spring 2004 following ACC/AHA revision of STEMI guideline.*